

REMARKS

Claims 1-11 are pending and have been examined in the present application. Claims 1-11 have been rejected under 35 U.S.C. § 102(e) over Tsurushima et al. (US2001/0047256 A1). Reconsideration of the present application is respectfully requested in light of the remarks below.

Claims 1-11 have been rejected under 35 U.S.C. § 102(e) over Tsurushima. Applicants respectfully traverse this rejection.

Independent claims 1 and 7 require bit allocation that performs “weighting in conformity to an equal-loudness curve that connects points representing pressure values of sounds having the same auditory loudness level for each frequency of the individual sub-band signals.” Independent claim 6 requires a “bit allocating unit for performing weighting conforming to an equal-loudness curve for the individual sub-band signals and then calculating the amount of bit allocation to equalize a weighted quantization error in the individual sub-band signals.” Applicants respectfully submit these features of the present invention are neither taught nor suggested by Tsurushima.

Tsurushima requires that its bit allocation process uses parameters from the psychoacoustic model. (See Tsurushima at paragraph 0139.) For example, Tsurushima applies “a minimum audibility curve” that represents psychoacoustic characteristics of the human hearing sense in order to mask the data and eliminate any data whose audible level is lower than the minimum audibility curve. (See Tsurushima at paragraph 0149.) As a result, Tsurushima’s bit allocation is CPU-intensive and results in a lower quality conversion of MPEG audio.

In contrast to Tsurushima's CPU-intensive and psychoacoustic-masking bit allocation process, Applicants' bit allocation process performs "weighting in conformity to an equal-loudness curve that connects points representing pressure values of sounds having the same auditory loudness level for each frequency of the individual sub-band signals" as required by independent claims 1 and 7.

Similarly, the bit allocation disclosed by Tsurushima is different from the "bit allocating unit for performing weighting conforming to an equal-loudness curve for the individual sub-band signals and then calculating the amount of bit allocation to equalize a weighted quantization error in the individual sub-band signals" as required by independent claim 6.

The difference between Tsurushima's bit allocation and the Applicants' bit allocation is at least due to the fact that the "equal-loudness curve" used in the Applicants' invention is completely different from the "minimum audibility curve" used in Tsurushima. Tsurushima's "minimum audibility curve" is used to eliminate any data whose audible level is lower than the minimum audibility curve. In contrast, Applicants' "equal-loudness curve" is used to connect points representing pressure values of sounds having the same auditory loudness level for each frequency of the individual sub-band signals. For at least this important difference from the cited prior art, the Applicants' invention results in a higher quality MPEG conversion and a significantly more efficient audio encoding process.

Applicants have reviewed the section of Tsurushima cited by the Office Action (namely, Fig. 14, elements 532, 530 and paragraphs 0137-0149). Tsurushima does not teach or suggest a bit allocation process that performs "weighting in conformity to an equal-loudness curve that connects points representing pressure values of sounds having the same auditory loudness level for each frequency of the individual sub-band signals" as

required by independent claims 1 and 7. Also, Tsurushima does not teach or suggest a “bit allocating unit for performing weighting conforming to an equal-loudness curve for the individual sub-band signals and then calculating the amount of bit-allocation to equalize a weighted quantization error in the individual sub-band signals” as required by independent claim 6.

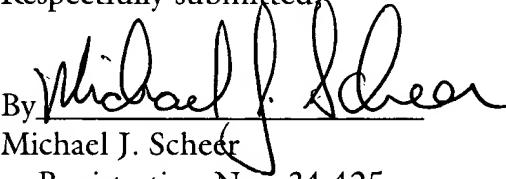
Withdrawal of the rejection of independent claims 1, 6 and 7 on the basis of Tsurushima is therefore respectfully requested.

Dependent claims 2-5 and 8-11 are dependent on and include all of the limitations of base claims 1, 6 and 7. Therefore, all of the above arguments regarding independent claims 1, 6 and 7 apply equally to dependent claims 2-5 and 8-11.

In view of the above remarks, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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